

Sampling and Averages

ANSWERS

Calculator | 30 minutes | Total marks: 26

Name

Class

- 1 Here are the numbers of minutes that 8 students spent on homework one evening.

31, 18, 24, 18, 40, 27, 22, 35

- (a) Write down the mode.

Answer 18 (1) [1 mark]

- (b) Work out the median.

18, 18, 22, 24, 27, 31, 35, 40

Answer 25.5 (1) [1 mark]

- (c) Work out the range.

Answer 22 (1) [1 mark]

- 2 Five parcels have these masses.

3.4 kg 1.8 kg 2.5 kg 4.1 kg 0.7 kg

Work out the mean mass.

total 12.5 kg (1)

12.5 ÷ 5

Answer 2.5 (1) kg [2 marks]

3

A sports centre has 72 members.

40 of the members are adults and the rest are children.

23 of the adults swim.

31 members swim altogether.

(a) Complete the two-way table.

	Swim	Do not swim	Total
Adults	23	17	40
Children	8	24	32
Total	31	41	72

all correct (2), at least 4 correct (1)

[2 marks]

(b) How many of the children do not swim?

Answer 24 (1)

[1 mark]

4

Here are the prices, in pounds, of 7 bikes in a shop.

£180, £195, £205, £210, £220, £240, £1235

(a) Work out the mean price.

2485 ÷ 7 (1)

Answer £ 355 (1)

[2 marks]

(b) Work out the median price.

Answer £ 210 (1)

[1 mark]

(c) Which average, the mean or the median, describes the prices better?

Give a reason for your answer.

The median: £1235 is an outlier that pulls the mean up (1)

[1 mark]

- 5 The table shows the number of times each of 25 students visited the library last week.

Number of visits	0	1	2	3	4
Frequency	3	7	8	5	2

Work out the mean number of visits.

$$0 + 7 + 16 + 15 + 8 = 46 \text{ (1)}$$

$$46 \div 25 \text{ (1)}$$

Answer 1.84 (1)

[3 marks]

- 6 The table shows the masses of 40 parcels.

Mass, m (kg)	Frequency	Midpoint	Frequency $\times$ midpoint
$0 < m \leq 2$	6	1	6
$2 < m \leq 4$	13	3	39
$4 < m \leq 6$	15	5	75
$6 < m \leq 10$	6	8	48

midpoints (1), frequency $\times$ midpoint (1)

- (a) Work out an estimate for the mean mass.

$$168 \div 40 \text{ (1)}$$

Answer 4.2 (1)

kg

[4 marks]

- (b) Explain why your answer to part (a) is only an estimate.

The exact masses are not known, so the midpoints are used (1)

[1 mark]

7

A factory makes 2400 phone cases in a day.

A sample of 80 of the cases is checked and 6 of them are faulty.

(a) Estimate how many of the 2400 cases are **not** faulty.

$$2400 \div 80 = 30 \text{ (1)}$$

$$74 \times 30$$

Answer 2220 (1)

[2 marks]

(b) The sample was the first 80 cases made that morning.

Give one reason why the estimate may not be reliable.

The sample is not random: one time of day may not be typical (1)

[1 mark]

8

The mean height of the 8 players in a netball squad is 1.68 m.

Two more players join the squad. The mean height of all 10 players is now 1.70 m.

Work out the mean height of the two new players.

$$8 \times 1.68 = 13.44 \text{ (1)}$$

$$10 \times 1.70 = 17 \text{ (1)}$$

$$(17 - 13.44) \div 2$$

Answer 1.78 (1)

m

[3 marks]

Question	Topic	RAG
1	I can find the median, mode and range	
2	I can find the mean	
3	I can complete a two-way table from information in words	
4	I can choose the best average when there is an outlier	
5	I can find the mean from a frequency table	
6	I can estimate the mean from a grouped table	
7	I can estimate for a population from a sample	
8	I can solve a problem using the mean	